

LC100 - February 23, 2022

Item # LC100 was discontinued on February 23, 2022. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

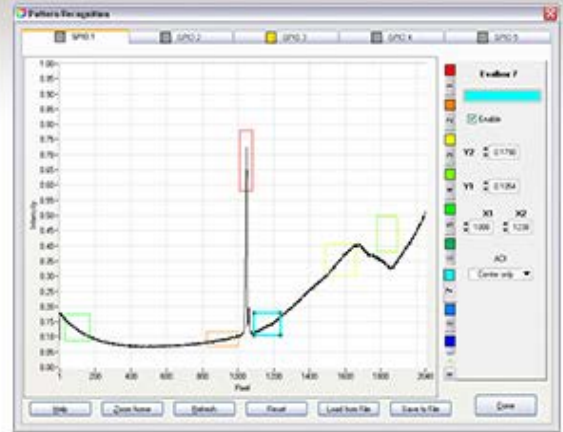
SMART HIGH SENSITIVITY CCD LINE CAMERA

- ▶ 2048 Pixel Line Array for 350 to 1100 nm
- ▶ Input and Output Triggers
- ▶ 5 Logic-Controlled I/O Ports for Pattern Matching
- ▶ Standalone Operation



LC100

80 mm x 80 mm x 33 mm Housing
 with Nikon F-Mount and
 Ø1/2" Post Mount Option



Definition of Regions of Interest
 for Simple Pattern Matching

[Hide Overview](#)

OVERVIEW

Features

- Input and Output Triggers
- 5 User-Configurable General Purpose Input/Output Ports (GPIO)
- Up to 16 Independently Programmable Regions of Interest
- Internal Simple Pattern Matching Logic
- Standalone Operation
- Adapter for F-Mount Objectives
- Compatible with 30 mm and 60 mm Cage Systems and SM2 Lens Tubes
- Ø1/2" Post Mountable
- F-Mount Compatible via Included Adapter
- Versatile Software Package (Splicco) and Driver Package (C/C++, VB, DotNet, LabVIEW) Included
- USB 2.0 Interface
- Powered via USB
- Dust-Proof, Rugged Housing Suitable for Field Applications

Specifications^a

Item #	LC100
Detector Range (CCD Chip)	350 - 1100 nm
Scan Rate Internal Trigger	Max 900 Scans/s
CCD Pixel Number	2048
CCD Pixel Size	14 µm x 56 µm (14 µm Pitch)
CCD Sensitivity	240 V/lx s
CCD Dynamic Range	333
Integration Time	1 ms - 50 s
S/N Ratio	2000:1

• ^aFor complete specifications, please see the Specs tab.

Thorlabs' LC100 Line Camera is designed for applications in optics, imaging, spectroscopy, biology, and industrial process control. It incorporates a 2048 pixel CCD array and is capable of detecting light in the 350 - 1100 nm range. With scan rates up to 900 scans per second (450 Hz with external trigger), this line camera offers trigger input and output, an analog output, and five digital software-controlled General Purpose Input/Outputs (GPIOs). The delay of the input

and output triggers can be adjusted, and the analog output monitors the intensity of a selectable single pixel of the line.

The LC100 line camera is capable of analyzing up to 16 freely definable regions of interest (ROIs) from the recorded line scans; it can analyze each spectrum independently using simple pattern matching. The five GPIOs can be programmed to return specific logic patterns according to the results of the spectrum analysis. Since version 4.3 of the SPLICCO software package the LC100 features a standalone mode that allows the line camera to perform this analysis without being connected to a PC.



Click to Enlarge
The LC100 with a Nikon F-Mount camera lens (not available from Thorlabs) mounted via an SM2NFM F-Mount to SM2 thread adapter.



Click to Enlarge
The LC100 with a 60 mm cage system.
post mounting.

The rugged, dust-proof housing makes the LC100 line camera suitable for field applications and process control. Typical applications include using the line camera as a sensor in custom spectrometers or interferometers as well as position or size sensing devices. These cameras are also used in defect sensing applications as well as for fill level and edge detection.

Mounting Options

The housing has eight 4-40 taps, making it compatible with our 30 mm Cage Systems and 60 mm Cage Systems. In addition, the housing is SM2 (2.035"-40)-threaded for Ø2" Lens Tube compatibility. A 1/4"-20 (M6) tap is provided for Ø1/2"

Limited
STOCK

The LC100(M) will be retired without replacement when stock is depleted. If you require this part for line production, please contact our OEM Team.

[Hide Specs](#)

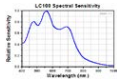
S P E C S

Item #	LC100 ^a
Sensor Specs	
Detector Range (CCD Chip)	350 - 1100 nm
CCD Pixel Size	14 µm x 56 µm (14 µm pitch)
CCD Sensitivity	240 V / (lx · s)
CCD Dynamic Range ^b	333
CCD Pixel Number	2048
Integration Time ^c	1.055 ms – 50 s
Scan Rate Internal Trigger	Max 900 Scans/s ^d
S/N Ratio ^{e,f}	≤2000 : 1
External Trigger	
Trigger Input	BNC
Trigger Signal	TTL 5 V and 3.3 V
Trigger Frequency, Scan Rate	Max 450 Hz, 450 Scans/s ^d
Trigger Puls Length	Min 50 ns
Trigger Delay	4.5 µs
General Purpose Input/Output (GPIO) Type	3.3 V TTL
Number of GPIOs	5
Region of Interests (ROI)	16
Analog Output	Programmable 0 - 4 V
General Specs	
Interface	Hi-Speed USB 2.0 (480 Mbit/s)
Dimensions (L x W x H)	80 mm x 80 mm x 33 mm (3.13" x 3.13" x 1.30")

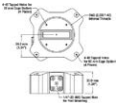
Weight

<0.4 kg

- All technical data are valid at 23 ± 5 °C and $45 \pm 15\%$ relative humidity (non condensing).
- Ratio of Saturation Voltage to Dark Current Voltage
- Exposure Time
- 0.055 ms Integration Time; Dependent upon Connected PC
- 10x Averaging; Dependent upon Inegration Time
- Use CCD Dynamic Range for Single Shots



Click to Enlarge



Click to Enlarge

[Hide User Interface](#)

USER INTERFACE

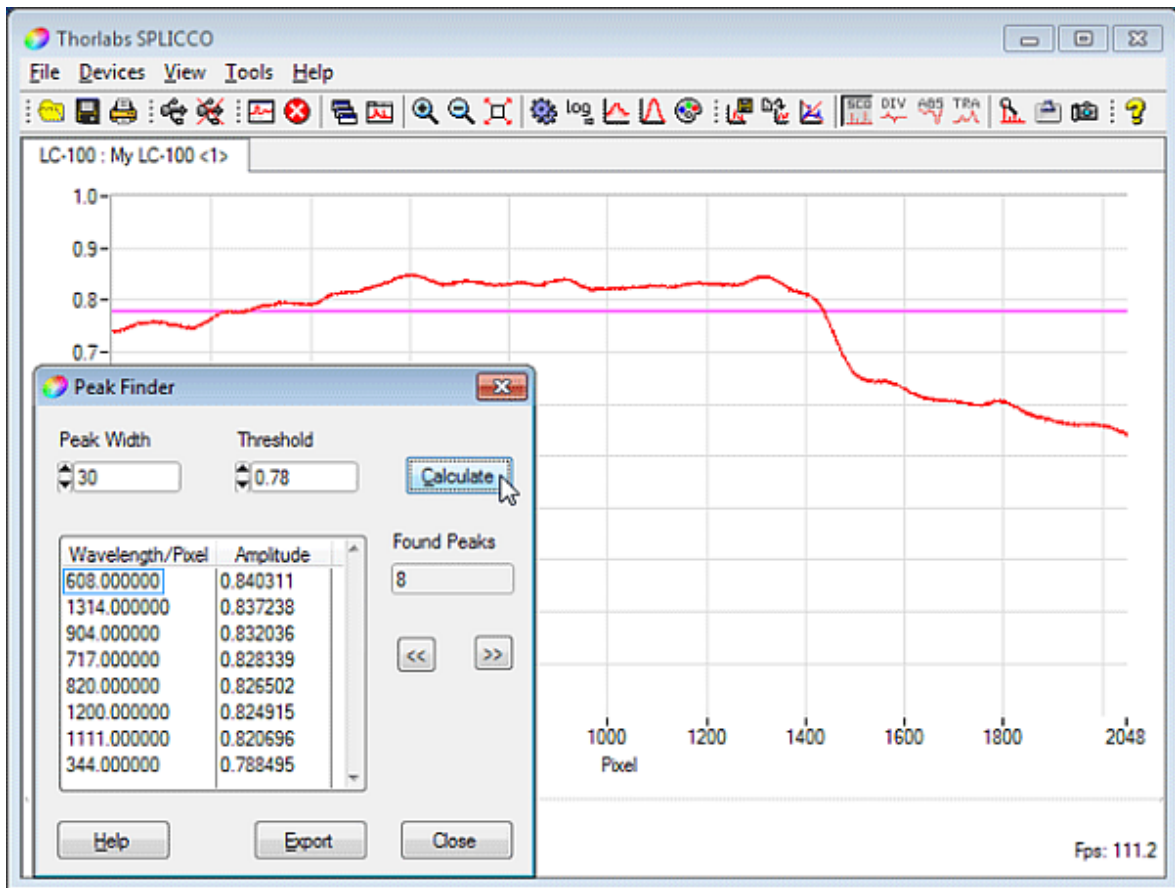
Graphical User Interface

Features

- Operates up to 10 Devices Simultaneously
- Auto-Detection of Compatible Devices
- Available Filters: Peak Finder, Smoothing, Averaging, Flip/Revert Picture
- Algorithms: Gaussian Transformation
- Normalized Y Axis
- Persistence Option
- Different Thread for Data Acquisition for Better Responsiveness to User Input
- User Selectable Colors
- Saving and Retrieval of Scans (JCAMP-DX or CSV)
- Copy Function to Clipboard
- Printable Windows
- Tabbed or Floating Windows
- Gaussian Data Fitting

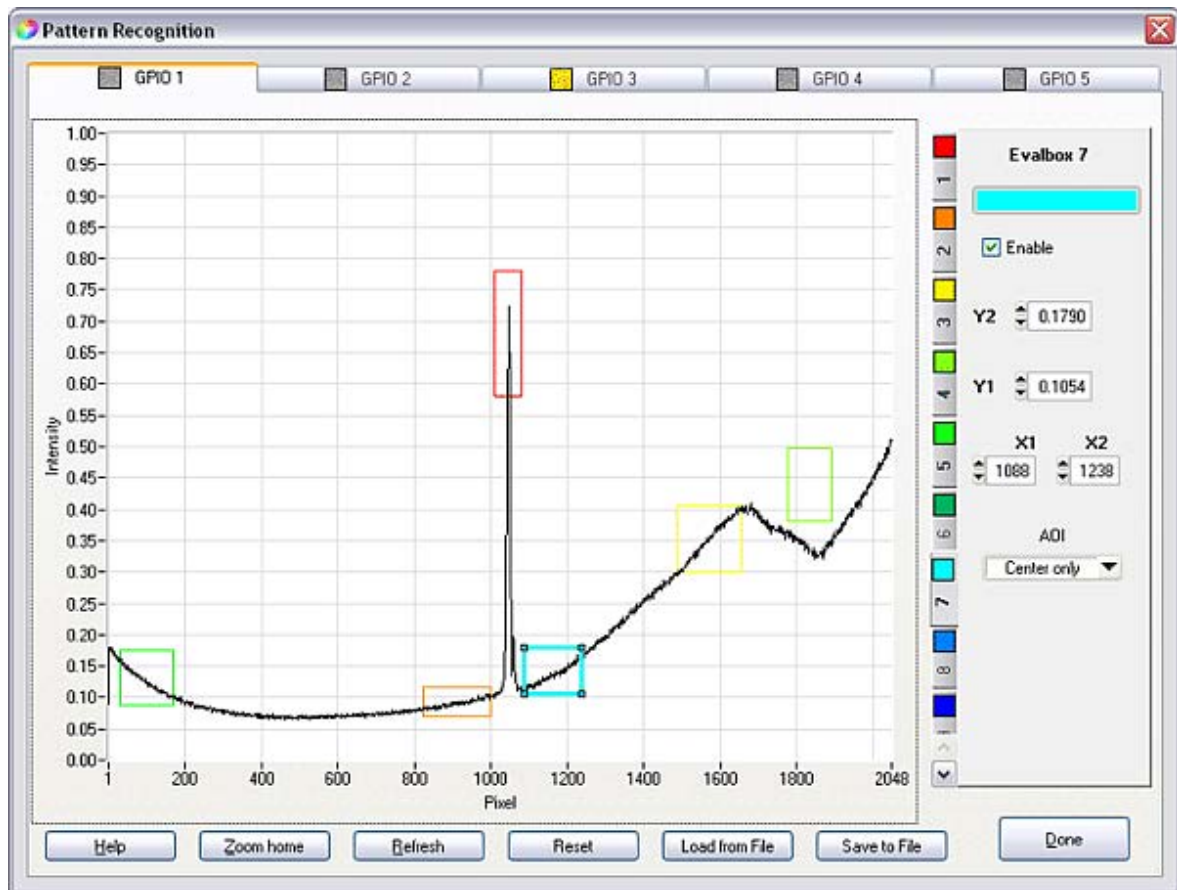
Adjustable Parameters

- Integration Time
- Trigger Modes: Internal, External, Continuous, Single Shot
- Averaging Method: Gliding or Block Average
- Smoothing Method: Block Smoothing
- Picture Flip and Revert



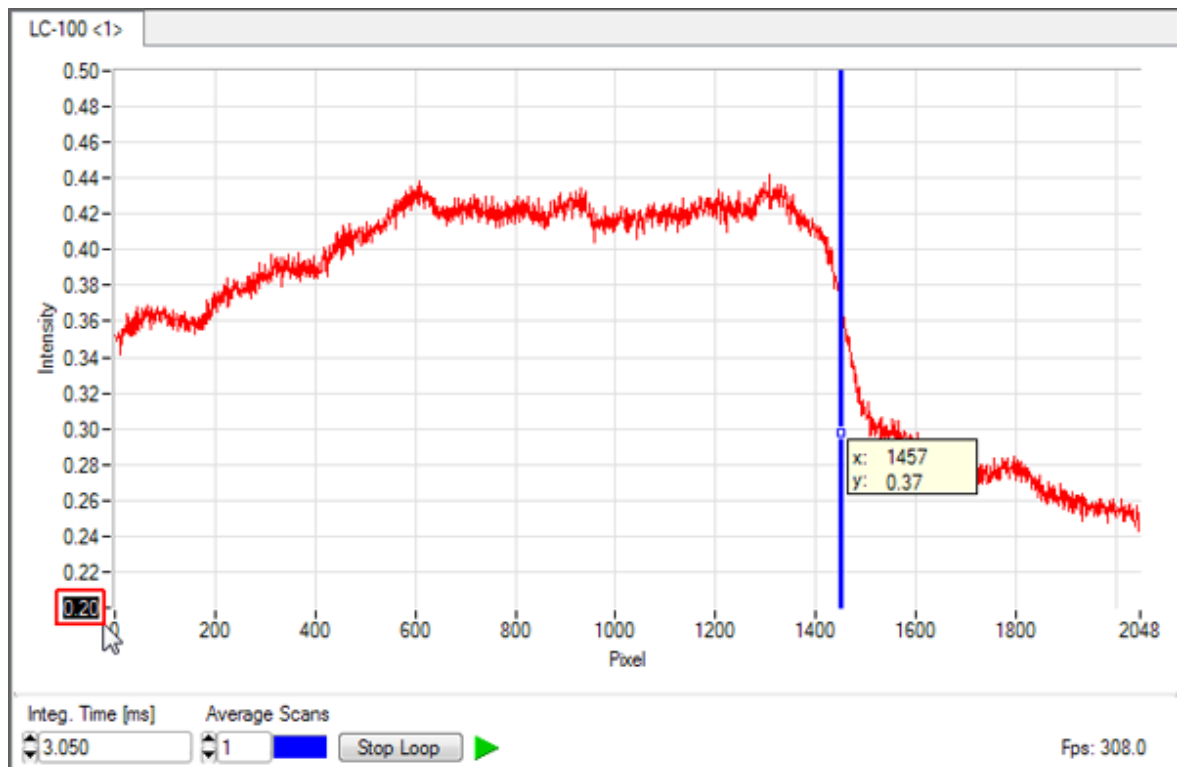
The LC100 Series Line Camera is featuring the easy-to-use SPLICCO software with graphical user interface. The package is designed for laboratory and manufacturing applications. The data, background, and peaks can be shown in a single graph. With the help of smoothing and averaging algorithms the user is able to enhance specific features of the spectra. Furthermore the software is able to handle several devices at one time which are presented in different windows. The above screen shows the peakfinder screen that lists all peaks with a given min peak-height (threshold) and peak width. SPLICCO also allows to record scans sequentially, see *Sequential Recording* below.

Simple Pattern Matching



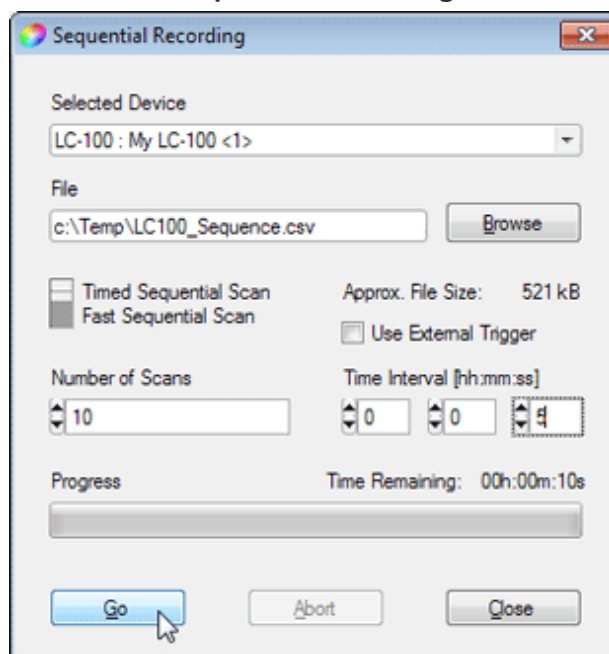
For the LC100 you can define up to 16 areas of interest (Evalboxes) with adjustable sizes at arbitrary locations in the Intensity vs. Pixel pane. They will be interrogated during scans. The result can be used for simple pattern matching and connected with customized logic to one of the 5 General Purpose Input Outputs (GPIO).

Editable Axes



You can easily set the displayed range of the measured intensity by entering the min and max values at the y axis of the intensity plot.

Sequential Recording



The SPLICCO software allows to sequentially record individual scans in CSV file format. A maximum of 1000 scans can be recorded at a rate of up to 900 scans per second.

[Hide Software](#)

SOFTWARE

Software for Spectrometers and USB Line Cameras

This package also includes the instrument drivers for the National Instruments™, LabWindows™/CVI, and LabVIEW™* development environments. The drivers are intended for developers who want to extend or adapt the functionality of the device to their special requirements.

Software

Version 4.3

Standard full software application packages and graphical user interfaces.

Advanced Beta Version*

Version 4.5.103.788 (April 22, 2013)

Full software version software application with latest bug fixes:

OR

- Improved VXIpn compatibility
- Includes 64bit versions of LabVIEW drivers/examples

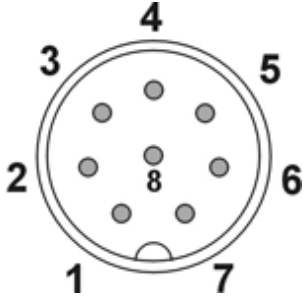


*This release candidate software version, which incorporates new features and/or bug fixes as outlined in the change log file on the download page, has been through several rounds of testing and there are currently no significant bugs. Once full testing and documentation is available, this version will become the standard software package. In the interim, Thorlabs is making this complete software file available for those customers whose research endeavors would benefit from the updated features.

[Hide Pin Configuration](#)

PIN CONFIGURATION

Pin Configuration of Trigger Cable Connector

Connector Pins	Pin #	Description
	1	Trigger Input, LL TTL
	2	Common GND (Trigger and GPIO)
	3	Analog Output
	4 - 8	GPIO Ports 1 - 5, LL TTL

[Hide Smart CCD Line Camera](#)

Smart CCD Line Camera

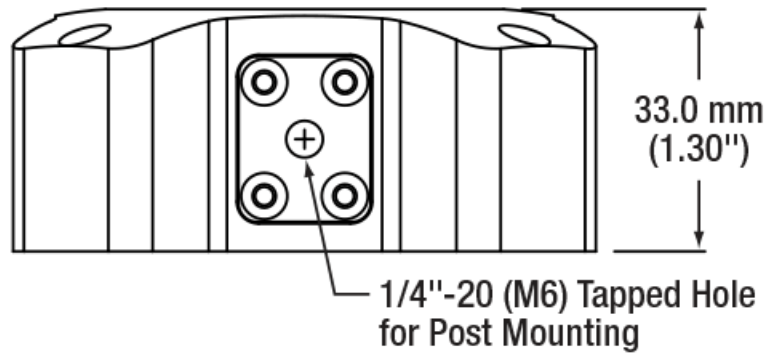
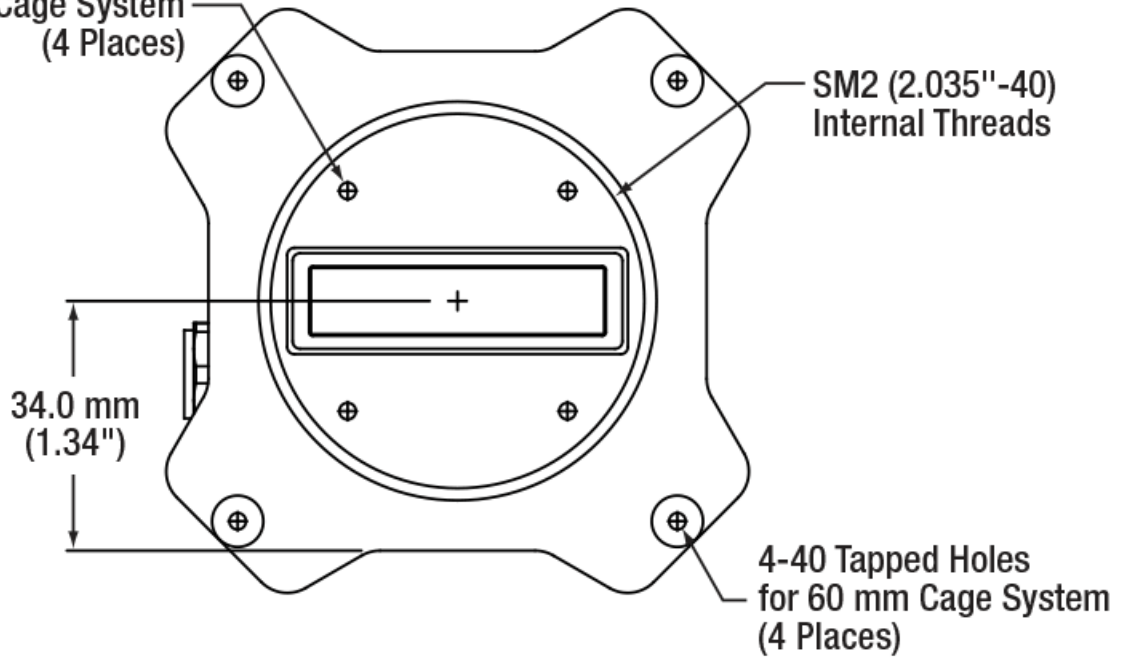
Part Number	Description	Price	Availability
LC100/M	Smart Line Camera, USB 2.0, 350 - 1100 nm, 2048 Pixel Linear Si CCD Array, Metric Thread	\$1,418.63	Today
LC100	Smart Line Camera, USB 2.0, 350 - 1100 nm, 2048 Pixel Linear Si CCD Array	\$1,418.63	Lead Time







4-40 Tapped Holes for
30 mm Cage System
(4 Places)



LC100 Spectral Sensitivity

